

Supplementary Web Appendix

Health Care Costs in Chronic Kidney Disease & Renal Replacement Therapy: A Population-Based Cohort Study

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eTable 1 International Classification of Diseases (ICD) codes for comorbidities^a and Anatomic Therapeutic Chemical (ATC) codes for drug prescriptions

Group	Code
Comorbidities	ICD-10 codes
Diabetes	E10-E11
Malignancies	C00-C99
Circulatory	I00-I99
- Hypertension	I10-I15
- Cardiovascular Disease	I20-I51
- Myocardial Infarction	I21
- Stroke	I60-I64
Chronic Obstructive Pulmonary Disease	J41-J44
Uremia	N00-N19
Infection	A00-B99, G00-G02, G04.2, G05-G07, H66-H67, H70, J00-J22, J32, J34.0, J36, J38.3, J39.0-J39.1, K10.2, L00-L08, M00-M01, M46.2-M46.5, M86, N10, N30.0
Prescription drugs	ATC codes
Erythropoietin stimulating agents	B03XA
Antineoplastic and immunomodulating agents	Chapter L
Various	Chapter V
Cardiovascular system	Chapter C
Antidepressant drugs	N05A, N05B, N05C, N06A, N06B

^a Comorbidities assessed from 10 years prior to January 1st, 2010, i.e. only ICD 10 codes used

eTable 2 Characteristics of matched general population comparators (matched by age, sex, and index year)^a

	CKD Stages 4 or 5 (not on dialysis)	Peritoneal Dialysis	Hemodialysis	Transplanted
N	4 949	484	2153	3 872
Sex (% men)	3212 (65%)	251 (52%)	1265 (59%)	2391 (62%)
Age (Years)				
- Mean (SD)	68 (14)	64 (16)	64 (15)	52 (13)
- Median (25 th -75 th)	71 (60-79)	67 (54-78)	67 (55-75)	53 (43-63)
n (%)				
- 18-49y	634 (13%)	95 (20%)	358 (17%)	1619 (42%)
- 50-59y	609 (12%)	78 (16%)	344 (16%)	1008 (26%)
- 60-69y	1165 (24%)	106 (22%)	611 (28%)	1026 (26%)
- ≥70y	2541 (51%)	205 (42%)	840 (39%)	219 (6%)
Education level^b				
- Patients <75y	3121 (63%)	328 (68%)	1628 (76%)	3812 (98%)
- ≤9y	699 (22%)	54 (16%)	357 (22%)	713 (19%)
- 10-12y	1277 (41%)	150 (46%)	676 (42%)	1589 (42%)
- >12y	1094 (35%)	110 (34%)	562 (35%)	1455 (38%)
- Missing	51 (2%)	14 (4%)	33 (2%)	55 (1%)
- Patients ≥75y (no information)	1828 (37%)	156 (32%)	525 (24%)	60 (2%)
Start follow-up in 2009	1294 (26%)	200 (41%)	589 (27%)	279 (7%)
Follow-up days in 2009				
- Mean (SD)	321 (91)	285 (114)	318 (91)	352 (53)
- Median (25 th -75 th)	365 (351-365)	365 (203-365)	365 (336-365)	365 (365-365)
Comorbidity^c				
- Diabetes	438 (9%)	27 (6%)	175 (8%)	164 (4%)
- Malignancies	698 (14%)	65 (13%)	270 (13%)	193 (5%)
- Circulatory disease	1898 (38%)	165 (34%)	723 (34%)	719 (19%)
- Hypertension	1089 (22%)	91 (19%)	438 (20%)	348 (9%)
- Cardiovascular disease	1063 (21%)	77 (16%)	365 (17%)	318 (8%)
- Myocardial Infarction ^d	211 (4%)	15 (3%)	53 (2%)	49 (1%)
- Stroke	237 (5%)	22 (5%)	76 (4%)	51 (1%)
- COPD ^e	34 (1%)	3 (1%)	11 (1%)	16 (0%)

^a SD=standard deviation; 25th-75th = 25th to 75th percentile

^b Education level only available in patients <75 years

^c Comorbid conditions defined as having a visit in inpatient or outpatient care during the last 10 years with a main or contributory diagnosis of the respective ICD-codes used (specified in eTable 1)

^d Myocardial infarction also included as a subgroup of cardiovascular disease

^e Chronic obstructive pulmonary disease

eTable 3 Annualized mean (SD) costs in patients with chronic kidney disease (CKD) stages 4 or 5 not on dialysis, peritoneal dialysis, hemodialysis and transplanted

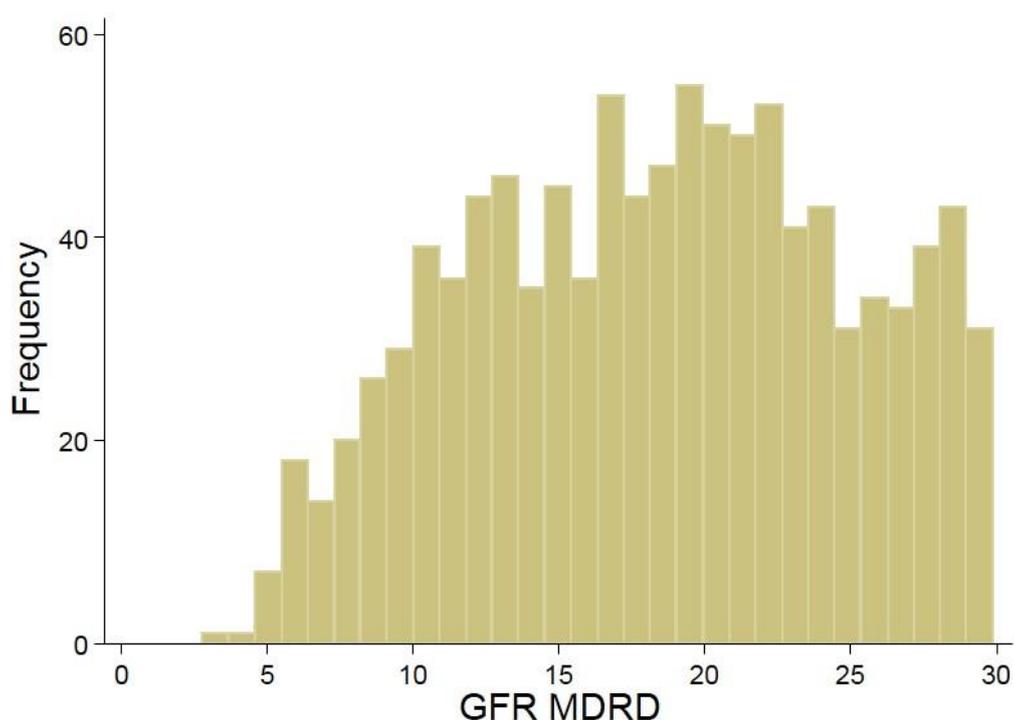
Costs	CKD Stages 4 or 5 not on dialysis (N=1046)	Peritoneal Dialysis (N=101)	Hemodialysis (N=460)	Transplanted (N=825)
Inpatient care	4338 (8404)	11 408 (15 079)	16 730 (18 674)	5889 (12 756)
- Cardiovascular disease	1770 (5422)	3702 (9990)	5508 (13 270)	879 (5191)
- Malignancy	403 (2641)	227 (1340)	396 (3145)	172 (1566)
- Infection	740 (3259)	1455 (4054)	3966 (9800)	1551 (8478)
Outpatient care	2326 (2093)	9987 (7304)	62 475 (11 542)	2834 (3180)
- Dialysis	10 (100)	5867 (7193)	60 357 (11 207)	25 (286)
- Cardiovascular disease	108 (526)	97 (363)	110 (475)	59 (285)
- Malignancy	120 (712)	98 (416)	119 (779)	100 (610)
Drugs	2917 (3690)	7353 (6870)	8395 (4286)	6794 (5134)
Fluids	0	29 900	0	0
Total	9581 (10 828)	58 648 (22 027)	87 600 (22 339)	15 518 (18 608)

eTable 4 Annualized mean (SD) costs in patients with chronic kidney disease (CKD) stages 4 or 5 not on dialysis, peritoneal dialysis, hemodialysis and transplanted **with treatment start before 2009**

Costs	CKD Stages 4 or 5 not on dialysis (N=786)	Peritoneal Dialysis (N=61)	Hemodialysis (N=340)	Transplanted (N=768)
Inpatient care	4383 (7962)	7946 (10159)	12 796 (14 363)	3251 (7196)
- Cardiovascular disease	1737 (5171)	2576 (5821)	3902 (8251)	754 (3775)
- Malignancy	435 (2420)	291 (1593)	258 (1660)	185 (1622)
- Infection	709 (2615)	1681 (4694)	3410 (7639)	883 (2975)
Outpatient care	2166 (1950)	8296 (5942)	63 704 (11 507)	2175 (1895)
- Dialysis	12 (114)	4318 (5549)	61 662 (11 096)	3 (79)
- Cardiovascular disease	84 (268)	96 (240)	130 (536)	63 (295)
- Malignancy	115 (562)	96 (338)	145 (896)	107 (631)
Drugs	3042 (3726)	6623 (6630)	8439 (3597)	5934 (3394)
Fluids	0	29 900	0	0
Total	9592 (10 474)	52 764 (15 997)	84 939 (20 559)	11 361 (9519)

eTable 5 Annualized mean (SD) costs in patients with chronic kidney disease (CKD) stages 4 or 5 not on dialysis, peritoneal dialysis, hemodialysis and transplanted **with treatment start in 2009**

Costs	CKD Stages 4 or 5 not on dialysis (N=260)	Peritoneal Dialysis (N=40)	Hemodialysis (N=120)	Transplanted (N=57)
Inpatient care	4201 (9632)	16 688 (19 413)	27 875 (24 246)	41 441 (17 404)
- Cardiovascular disease	1871 (6130)	5418 (14 098)	10 060 (21 378)	2562 (14 083)
- Malignancy	306 (3222)	130 (825)	784 (5487)	0 (0)
- Infection	834 (4702)	1109 (2836)	5540 (14 172)	10 546 (29 119)
Outpatient care	2809 (2415)	12 565 (8438)	58 995 (10 959)	11 714 (3663)
- Dialysis	2 (27)	8229 (8708)	56 659 (10 724)	314 (1012)
- Cardiovascular disease	182 (945)	99 (500)	55 (219)	0 (0)
- Malignancy	137 (1045)	102 (518)	47 (221)	6 (45)
Drugs	2540 (3560)	8467 (7161)	8269 (5829)	18 370 (9136)
Fluids	0	29 900	0	0
Total	9550 (11854)	67 620 (26 715)	95 139 (25 360)	71 525 (20 591)



eFigure 1 Distribution of estimated glomerular filtration rate (GFR; ml/min/1.73m²) in patients with chronic kidney disease stages 4 or 5 (n=1046)^f

^f Estimated using the MDRD formula